



EFFECT OF PTERYGIUM EXCISION WITH CONJUNCTIVAL AUTOGRAFTING ON CORNEAL TOPOGRAPHY

Dr Asima Hassan

MS, Department of Ophthalmology, Govt Medical College Srinagar, Jammu and Kashmir.

Dr Ejaz Akbar Wani*

Associate Professor, Department of Ophthalmology, Govt. Medical College Srinagar, Jammu and Kashmir. *Corresponding Author

ABSTRACT

Aim: To study the effects of pterygium excision with conjunctival autografting (CAG) on corneal topography. **Study Design:** Prospective, observational. **Materials and Methods:** 50 eyes of 50 patients with progressive pterygium who attended the Out Patient Department of Government Medical College, Srinagar, from September 2017 to August 2018, above 18 years of age were included in the study. Patients underwent complete eye examination along with preoperative corneal topography where corneal astigmatism at central 3mm and total mean refractive power of cornea were noted. Patients then underwent pterygium excision with conjunctival autografting using fibrin glue. Corneal topography was again repeated postoperatively at 2nd week, 1st month, 3rd month and 6th month of follow up and results were noted. **Results:** The mean age of study patients was 39.5±9.58years. The mean corneal astigmatism at central 3mm significantly decreased from 1.95D preoperatively to 0.61D at postoperative 6th month with an average decrease of 1.34D over a period of 6 months following pterygium excision using conjunctival autografting (p-value 0.003). The total mean refractive power of cornea increased significantly from 43.17D preoperatively to 44.59 D postoperatively at 6th month of follow up (p value <0.001). **Conclusion:** Pterygium excision with conjunctival autografting leads to significant corneal topographic changes with a significant decrease in corneal astigmatism and an increase in total mean refractive power of the cornea.

KEYWORDS : Pterygium, conjunctival autografting, corneal topography.

INTRODUCTION

Pterygium is one of the common ocular surface disorders found most commonly in middle aged and elderly individuals. Pterygia can vary from a small atrophic quiescent lesion to a large aggressive, rapidly growing fibro vascular lesion that can distort the corneal topography, and in advanced cases they can obscure the optical center of the cornea¹. The main indications for pterygium surgery are visual impairment due to either astigmatism or direct invasion of the visual axis².

Corneal topography provides us with a detailed description of various curvature and shape characteristics of the cornea. Most of the currently available systems work by projecting a Placido disc onto the cornea, recording the reflected image, analyzing the image with a computer, and then displaying a color coded curvature map of the corneal surface. This information is very helpful for the illustration of corneal astigmatism due to pterygium. It is currently accepted that the effect of the pterygium on corneal astigmatism is to increase with the-rule astigmatism (WTRA)³. This study was carried out to evaluate the effect of pterygium excision with conjunctival autografting using fibrin glue on corneal topography.

MATERIALS AND METHODS:

The present study was a hospital based prospective observational study conducted on 50 eyes of 50 patients attending the Postgraduate Department of Ophthalmology, Government Medical College and hospital Srinagar, over a period of one year from September 2017 to August 2018. After obtaining the ethical clearance from the institutional ethical committee, written informed consent was taken from the patients. Patients above 18 years of age, cases of primary progressive nasal pterygium with reduced visual acuity, ocular discomfort and patients who agreed to complete a minimum of 6 months postoperative follow up were included in the study. Patients with recurrent pterygium and any ocular surface infection were excluded. Before surgery a complete eye examination including visual acuity (logMAR), refraction, IOP measurement, schirmer's test, slit-lamp examination and dilated fundus examination was done. Corneal topography using ATLAS (Ziess) Model 9000 Corneal Topography System, from Carl Zeiss Meditec Inc (USA) was performed preoperatively on all patients.

Surgical procedure was done after giving peribulbar block. Pterygium excision with conjunctival graft taken from the superior-temporal bulbar conjunctiva of the same eye was secured on bare area by placing 2 drops of fibrin sealant (using dual syringe system with common plunger) on bare sclera and a drop on backside of the graft. The graft

was then flipped on to bare sclera and pressed gently. After 2 minutes graft adhesion was confirmed and eye was bandaged after injecting dexamethasone and gentamicin sub-conjunctivally away from the graft.

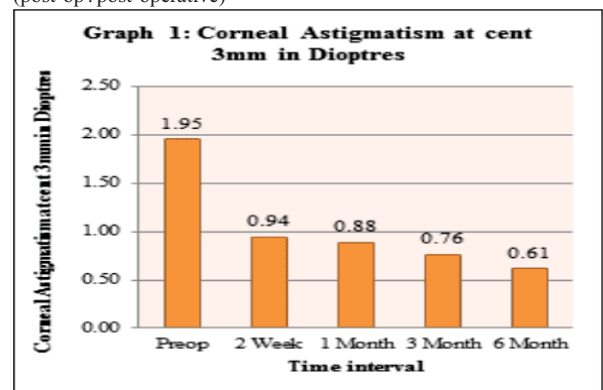
On first postoperative day, bandage was removed and patients were examined and started on steroid antibiotic eye drops 6 times a day which were tapered over 4 to 6 weeks. Postoperatively corneal topography was again performed at 2nd week, 1st month, 3rd month and 6th month respectively. The parameters observed during preoperative and post-operative corneal topography were corneal astigmatism at central 3mm and total mean refractive power of cornea.

RESULTS:

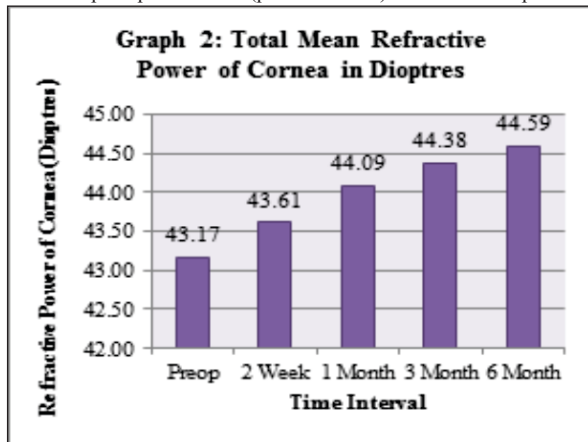
The mean age of study patients was 39.5±9.58years. In the present study (as shown in Table 1 and Graph 1) the mean corneal astigmatism significantly decreased from 1.95D preoperatively to 0.94D postoperatively at 2nd week, 0.88D at 1 month, 0.76D at 3rd month and 0.61D at postoperative 6th month with an average decrease of 1.34D pre and 6 month postoperatively (p-value 0.003).

Time Interval	Mean	SD
Preoperative	1.95	1.520
2 Week (post-op)	0.94	0.849
1 Month (post-op)	0.88	1.127
3 Month (post-op)	0.76	0.312
6 Month (post-op)	0.61	0.367

(post-op: post-operative)



In our study the total mean refractive power of cornea increased significantly from 43.17D preoperatively to 43.61D at postoperative 2nd week, 44.09D at 1 month, 44.38D at 3rd month and 44.59D at 6th month of postoperative visit (p value <0.001) as shown in Graph 2.



DISCUSSION:

Pterygium leads to a considerable effect on corneal refractive status which has been previously measured in various studies by different methods. In our study, corneal topography using Atlas Model 9000 Carl Zeiss was done in all the patients to evaluate pre and postoperative corneal topographic changes.

It has been established in many studies that, pterygium can cause flattening of the central cornea, often resulting in with-the-rule astigmatism and surgery decreases the pterygium-induced corneal astigmatism at 3 mm¹. In our study too there was a significant decrease in mean corneal astigmatism at central 3mm over a period of 6 months which reduced from 1.95D preoperatively to 0.61D postoperatively at 6 month of follow up (p-value 0.003), with an average decrease of 1.34D over a period of 6 months after excision. On similar lines **Maheshwari S⁵** in their study observed that the mean preoperative topographic astigmatism significantly reduced from 4.40± 3.64D to 1.55±1.63D postoperatively (p value <0.001). **Bahar I et al⁶** in their study observed mean simulated keratometric astigmatism at 3mm reduced from 3.12± 2.43D before surgery to 2.51± 2.50D post operatively (p value 0.05).

In the present study the total mean refractive power of cornea increased significantly from 43.17D preoperatively to 43.61D at post-operative 2nd week, 44.09D at post-operative 1st month, 44.38D at 3rd month and 44.59 D at 6th month postoperative follow up (p value <0.001). This observation agrees with that of **Maheshwari S⁵** whose study showed that the mean Average Corneal Power increased from 42.91±2.20 diopter (D) to 44.25±1.77D (P value < 0.001) after 1 month of pterygium excision. **Errais K et al⁷** in their study also observed that the mean spherical power of cornea increased from 41.65±3.29 D preoperatively to 44.58±1.55D (p=0.04) after 3 months postoperatively which is in conformity with our study.

CONCLUSION:

Our study concludes that the corneal topographic changes improve significantly following pterygium excision. Pterygium excision with conjunctival autografting causes significant decrease in pterygium induced corneal astigmatism and an increase in total mean refractive power of cornea.

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